The importance of being weakly-bound

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Reactions with weakly-bound light nuclei ^{7}Li and ^{9}Be have continually being useful as spectroscopic tools, particularly for their incomplete fusion products [1–3]. Breakup and/or nucleon-transfer [4–8] are believed to be important reaction mechanisms in weakly-bound nuclei, possibly contributing to the high incomplete fusion cross-sections observed. However direct evidence linking breakup and/or nucleon-transfer to incomplete fusion is scarce.

From our recent sub-barrier coincidence measurements of ^{7}Li-induced reactions [9], nucleon transfer followed by breakup of the projectile-like nuclei was observed to be a prominent channel. Furthermore, new understanding of excitation dependent life-time of resonance states in weakly-bound nuclei have allowed promising development in the classical trajectory model PLATYPUS [10] that will shed light on breakup and its role in incomplete fusion.

New results from this study will be presented and discussed.

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